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# Ileocolic intussusception due to intestinal metastatic melanoma. Case report and review of the literature

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## ABSTRACT

The small intestine is a frequent site of melanoma metastases and the most common cause of secondary intestinal tumors. Even though, its presentation with intestinal obstruction due to intussusception is very rare. We present a 47-year-old woman with a medical history of facial melanoma operated 17 years ago and recently diagnosed of cervical recurrence who complained of abdominal pain of one week duration accompanied with vomiting and abdominal distension. Computed tomography (CT) scan revealed marked distension of the small intestine with features suggesting intussusception of the distal ileum. At laparoscopic exploration a massive ileocolic intussusception was found with invagination of the last 60 cm of ileum inside the cecum and ascending colon. Surgical reduction revealed a tumor of approximately 2 cm in the distal end of the intussuscepted intestine acting as the lead point. Resection of non-viable ileum along with the tumor and end-to-end anastomosis was performed. Many other lesions of smaller size were found distantly in the proximal small bowel but were not treated. The patient had a full recovery and was discharged three days after surgery. Pathological examination showed metastatic melanoma and a positron emission tomography (PET) scan confirmed disseminated disease with brain metastasis. The patient died three months after surgery. Intestinal occlusion due to metastatic disease is a rare condition but should be taken into account particularly in patients with history of cancer. Surgical intervention with a mini-invasive laparoscopic approach is feasible. Intestinal resection and anastomosis is mandatory for either curative or palliative intentions providing a satisfactory treatment.

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## 1. Introduction

Intussusception, known as the invagination of a segment of the gastrointestinal tract (intussusceptum) into an immediately adjacent portion (intussusciens), is a rare condition in the adult population accounting for less than 5% of all intussusceptions.<sup>1,2</sup> Unlike in children, diagnosis is challenging because it often presents with nonspecific symptoms. An occlusive syndrome with abdominal pain is the usual presentation, however only around 1% of all bowel obstructions are due to intussusception.<sup>2,3</sup> Surgery is the treatment of choice since in most cases the etiology involves an underlying pathologic organic process with possible malignant origin that acts as a lead point.<sup>1–3</sup>

Even though most small bowel tumors are metastatic, and melanoma metastases are the most common,<sup>4,5</sup> its presentation with intestinal obstruction due to intussusception is exceptional with few reported cases in the recent literature. In this manuscript

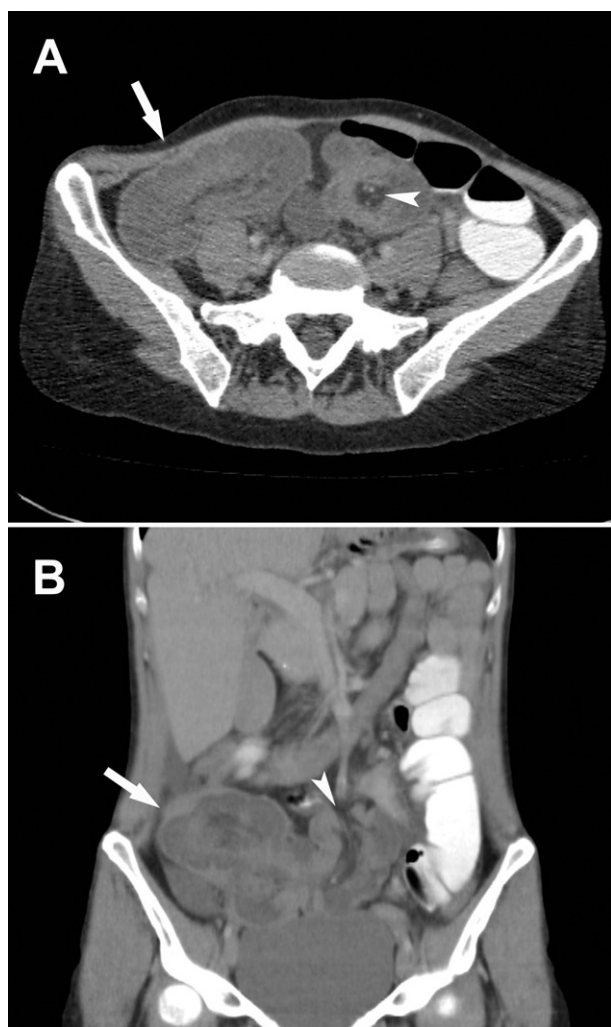
we aimed to describe a very unusual presentation of a rare disease by reporting a case of ileocolic intussusception due to metastatic melanoma treated by an alternative mini-invasive surgical approach and followed by a brief review of the literature.

## 2. Case report

We present a 47-year-old woman who was admitted to the emergency department complaining of a colicky mid abdominal pain of one week duration that was progressively increasing and accompanied with vomiting and abdominal distension. She denied fever or chills, as well as any history of similar episodes of pain. She had no previous abdominal surgery. Her medical background was significant for facial melanoma resected 17 years ago with no further follow up controls. Three months before admission she was diagnosed with cervical recurrence of melanoma. Routine laboratory tests were normal. On physical examination a distended abdomen with mainly a right lower quadrant pain was evidenced. Plain abdominal X-ray showed central air fluid levels in the small intestine. CT scan examination revealed marked distension of the small intestine with features suggesting intussusception in the topography of the distal ileum (Fig. 1). At laparoscopic exploration,

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**Fig. 1.** Pre-operative CT scan of the abdomen. (A) Axial plane images showed a reniform mass with the target sign due to bowel edema in the right lower quadrant suggesting ileocolic intussusception (arrow) as well as the vascular pedicle of the mesentery involved (arrow head). (B) Same features seen after coronal reconstruction.

a loaded right hemicolon in association with a point of occlusion in the distal ileum and distension of the proximal small intestine was found. Due to the difficult exploration of the lower abdominal cavity and the demanding colonic manipulation, the procedure was continued by a hand-assisted approach by means of a wound retractor (Alexis®, Applied Medical, Rancho Santa Margarita, USA) after amplifying the incision of the 5 mm trocar on the right iliac fossa. In order to avoid a right hemicolectomy, manual reduction was attempted without success. Therefore the right hemicolon was mobilized and exteriorized through the hand port site (Fig. 2) and a massive ileocolic intussusception was found with invagination of the last 60 cm of the ileum inside the cecum and ascending colon. An alternative surgical maneuver to achieve reduction was subsequently performed by an enterotomy in the intussusciptens. This made possible to extract the intussusceptum through the ileocecal valve and the distal ileum and a tumor of approximately 2 cm was recognized in the distal end of the intussuscepted intestine acting as the lead point (Fig. 2). Resection of non-vital ileum along with the tumor and primary end-to-end anastomosis was performed (Fig. 3). Multiple other lesions of smaller size were recognized distantly in the proximal small bowel but were not resected. The patient had a full recovery and was discharged three days after surgery. Histological examination showed metastatic melanoma and a PET scan

confirmed disseminated disease with brain metastasis. The patient was treated with standard chemotherapy with no response and died three months after surgery from advanced disease.

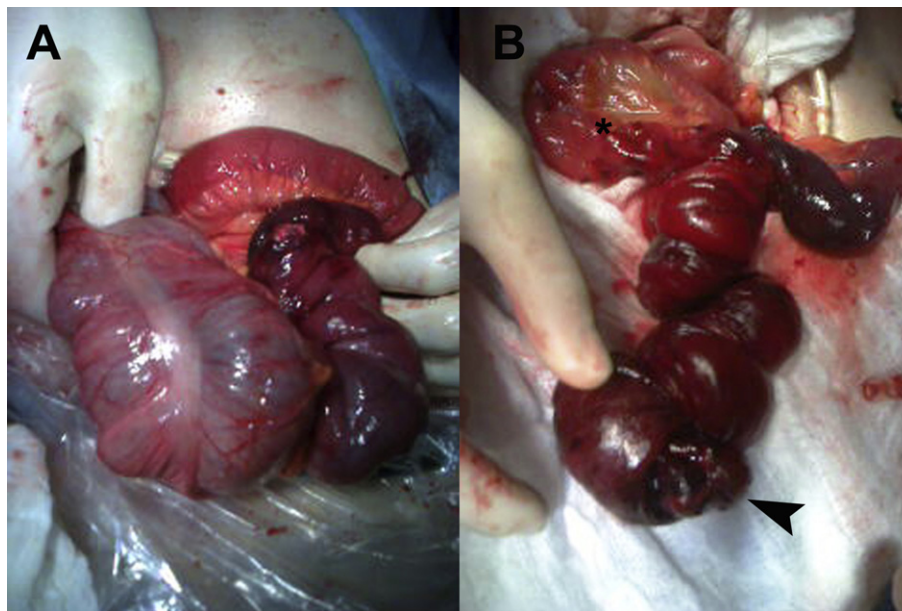
### 3. Discussion

According to recent reviews,<sup>4–6</sup> the small intestine is a frequent site of melanoma metastases and this is the main cause of secondary intestinal tumors. Superficial spreading melanoma is the most common type of melanoma (70–80%) and therefore responsible for most gastrointestinal metastases, which can develop even more than 10 years after resection of the primary cutaneous lesion.<sup>4,7,8</sup> Around 60% of the patients who suffer from melanoma have small bowel metastases at the moment of death, but in only 1–4% of the cases they are detected as complications occur.<sup>4</sup> These include abdominal pain, intestinal obstruction, weight loss or anemia due to chronic enterorrhagia.<sup>7</sup> Intestinal obstruction due to the intussusception of these lesions is a rare event. Less than 25 cases have been reported in the literature so far.

Intussusceptions can be either antegrade (97%) or retrograde and they are classified according to their location in the gastrointestinal tract in order of frequency as: enteric, colocolic, ileocecal (when the origin is at the ileocecal valve), ileocolic, colorectal and rectorectal.<sup>1,2,9–11</sup> In adults the mean age of presentation is 50 years with nearly the same incidence for both genders.<sup>1,2,9,10</sup> The classic triad of intermittent abdominal pain, bloody stools and a palpable abdominal mass presented in children is sporadic in adults. As in our patient, clinical presentation is unspecific and the most frequent symptoms include abdominal pain followed by nausea and vomiting.<sup>1–3</sup> This makes preoperative diagnosis challenging with variable results reported, ranging from 14 to 75% in most series.<sup>1–3,9,10</sup> CT scan is the best diagnostic tool, with an accuracy approaching 80% when interpreted by experienced radiologists.<sup>1,2,10</sup>

Even though in children most intussusceptions are considered idiopathic, in adults a lead point is present in 90% of the cases.<sup>1–3</sup> A lead point is a focal area of traction that can be either a mucosal, intramural or extraluminal lesion. In two thirds of the cases a neoplasm is involved and nearly half are malignant.<sup>1</sup> The most common type of intussusception in the adult population is enteric and the majority of the lesions in this location are benign (50–75% of the cases).<sup>1</sup> On the contrary, colonic intussusceptions have most likely a malignant origin. Recently, Goh et al.<sup>10</sup> identified colonic intussusception and the presence of anemia as independent preoperative predictors of malignancy.

Surgery is the treatment of choice since in most cases the etiology involves an underlying pathologic process with possible malignant origin that acts as a lead point. Nearly all cases require emergency surgery, without a precise surgical strategy. There is not a clear consensus about the optimal surgical approach and there is still controversy about reduction before resection.<sup>1–3,10–12</sup> Historically, most authors agree that resection without previous reduction is preferable in order to avoid perforation with contamination or the theoretical risk of embolization and dissemination of malignant cells, mainly when a colonic intussusception is present. Anyways there is no scientific evidence to support these recommendations. More recently, others suggest that reduction prior to resection can be safely performed in selected patients with suspected benign disease, especially when small bowel intussusception is presented without ischemia or there is a risk of short gut syndrome after wide en-block resections.<sup>3,12</sup> In our patient manual reduction was impossible due to the length of bowel compromised and therefore extracorporeal reduction by enterotomy was necessary in order to avoid an unnecessary right hemicolectomy in a patient with an already ominous prognosis.



**Fig. 2.** Intraoperative photograph indicating ileocolic intussusception (A) and the specimen after surgical reduction prior to resection (B). Metastatic melanoma as an ulcerated polypoid mass is shown as the lead point (arrow head) and vitally recovered distal ileum is seen after reduction (asterisk).

Only 14% of intussusceptions are ileocolic.<sup>11</sup> In previous reports most cases of ileocolic intussusception described required a conventional right hemicolectomy.<sup>10,12–14</sup> The majority of them with confirmed benign etiology after histological examination.<sup>12</sup> Two of the latest case series of adult intestinal intussusception, first Goh et al.<sup>10</sup> and later Wang et al.,<sup>12</sup> reported a total of 30 cases of ileocolic invagination and none of them were attributable to metastatic melanoma. To date, we found only three cases of ileocolic intussusception due to metastatic melanoma reported in the literature. The first two cases were reported in 1989<sup>15,16</sup> both secondary to intestinal metastases and almost 20 years later Rea et al.<sup>17</sup> reported the last case, but this time due to colonic metastatic disease.

When metastatic disease is presented, surgical resection is the best choice for palliation and in patients in whom complete removal of the disease is feasible, it may prolong survival.<sup>4–6</sup>

Conventional laparoscopic techniques have proven its advantage in almost all aspects of abdominal surgery. Nevertheless, hand-assisted laparoscopy was conceived as a hybrid procedure that combines the benefits of both minimally invasive and conventional open surgeries. Recent reports described the utility of the laparoscopy for either ileocecal<sup>11</sup> or ileocolic intussusceptions.<sup>18</sup> In our patient the hand-assisted approach made possible the definitive diagnosis of the disease by the easier laparoscopic dissection and mobilization of a loaded right hemicolon with the subsequent exteriorization and reduction of the intussusception. This allowed the preservation of the ileocecal valve and thus avoided a mayor resective surgery with no impact in overall prognosis. Our patient had a fast recovery with the known benefits of mini-invasive surgery. As far as we know this is the first time a laparoscopic hand-assisted approach is successfully performed for the treatment of adult intestinal intussusception.

#### 4. Conclusion

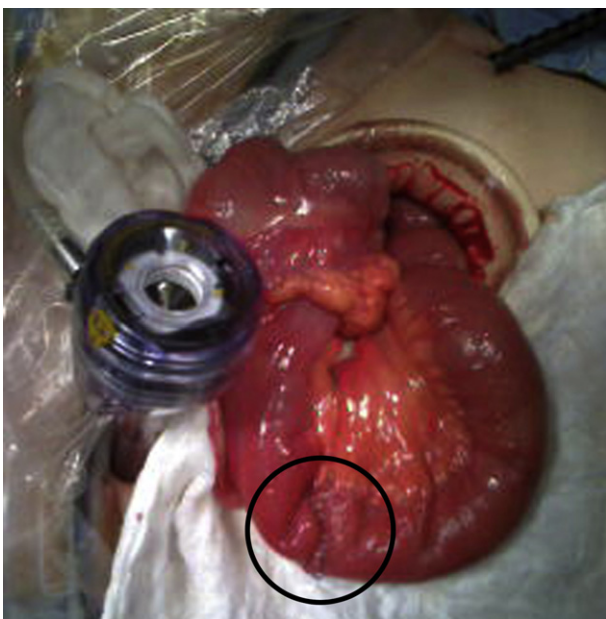
Intestinal occlusion due to metastatic disease is a rare condition but should be taken into account particularly in patients with history of cancer. Surgical intervention with intestinal resection and anastomosis is mandatory for either curative or palliative intentions providing a satisfactory treatment. The hand-assisted laparoscopic approach appears to be a safe and feasible alternative when used judiciously in the hands of experienced surgeons.

#### Conflicts of interest statement

None.

#### Funding

None.



**Fig. 3.** Operative picture after resection and extracorporeal manual end-to-end anastomosis (circle).

## Ethical approval

Written informed consent was obtained from the patient's next of kin for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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